

Sumitomo Metal Mining Pogo LLC Unit 412 Site Specific Operating Limits Report

Submitted to:
Sumitomo Metal Mining Pogo LLC
Delta Junction, Alaska

Submitted By:
Specialized Environmental Solutions
Los Osos, California
November 2013

Sumitomo Metal Mining Pogo LLC (Pogo) operates a solid waste incinerator (Unit ID 412) at the Pogo Mine located near Delta Junction, Alaska. The incinerator is subject to the requirements of the Clean Air Act New Source Performance Standards (NSPS) for Commercial and Industrial Solid Waste Incineration (CISWI) Units, 40 C.F.R. Part 60, Subpart CCCC (Subpart CCCC). An initial performance test was conducted on the incinerator during the period of September 29, 2013 through October 2, 2013. The source test program had two objectives: (1) to conduct the initial performance test of the CISWI unit to demonstrate compliance with the emission limits in Table 8 of Subpart CCCC; and (2) to establish the operating limits identified in Pogo's Petition submitted to EPA in accordance with 40 C.F.R. § 60.2115. EPA approved Pogo's petition on September 27, 2013.

As required in 40 C.F.R. § 60.2200(b), Pogo hereby submits the values of the operating limits established during the initial performance test of the solid waste incinerator.

Pogo's petition identified the following seven incinerator operating parameters for which operating limits were established during the initial performance test.

- **Waste Charge Rate Limit.** The maximum waste charge limit was determined as the maximum rolling 1-hour average of the waste-charge weights recorded during the performance test.
- **Charge Interval Limit.** The minimum charge interval limit was established as the minimum time interval between waste charges recorded during the performance test.
- **Primary Combustion Chamber Temperature Limit.** The minimum temperature limit of the primary combustion chamber was determined as the minimum rolling 1-hour average temperature recorded during the performance test.
- **Secondary Combustion Chamber Temperature Limit.** The minimum temperature limit of the secondary combustion chamber was determined as the minimum rolling 1-hour average temperature recorded during the performance test.
- **Primary Combustion Chamber Burn Time Limit.** The minimum primary chamber burn time, following the final waste charge each day, was established as the primary burndown time of 5 hours, recorded during each day of the performance test.
- **Secondary Combustion Chamber Burn Time Limit.** The minimum secondary chamber burn time, following completion of the primary chamber burndown cycle, was established as the secondary burndown time of 2 hours, recorded during each day of the performance test.
- **Waste Composition Limits.** The maximum daily weight-percent for each waste component (i.e., municipal solid waste (MSW), sludge, and adsorbs) was determined as the maximum weight-percent of each component that was burned on any one day during the three-day performance test.

To establish the operating limits, all identified operating parameters were monitored and recorded by Pogo during the performance test. These monitoring data were compiled, and operating limits were calculated based on the applicable averaging times. The monitoring data and operating-limit calculations are provided as Attachment 1. Table 1 presents a summary of the operating limits.

The waste component operating limits were established according to the approach presented to Pogo by EPA during a September 18, 2013 teleconference meeting. On each test day, the waste composition consisted of different percentages of the three components: MSW, sewage sludge, and cleanup adsorbs. The highest percentage of each waste component that was burned on one of those days established its upper bound. The waste composition's highest sludge percentage, 49 percent, occurred on test-day 1, and therefore the upper bound for sludge was established at 49 percent. Similarly, 27 percent adsorbs and 76 percent MSW were established as upper bounds on test-days 2 and 3, respectively.

TABLE 1
OPERATING LIMITS - POGO INCINERATOR UNIT ID 412

PARAMETER	OPERATING LIMIT	AVERAGING PERIOD
Waste charge rate	Maximum charge weight = 53 lb	Rolling 1-hr average
Waste charge interval	Minimum charge interval = 15 min	none
Temperature of the primary combustion chamber	Minimum primary combustion chamber temperature = 1,226 °F	Rolling 1-hr average (of 1-min DAS measurements ²)
Temperature of the secondary combustion chamber	Minimum secondary combustion chamber temperature = 1,785 °F	Rolling 1-hr average (of 1-min DAS measurements ²)
Primary combustion chamber burn time	Minimum duration of primary chamber burndown cycle = 5 hr after final waste charge each operating day	none
Secondary combustion chamber burn time	Minimum duration of secondary chamber burndown cycle = 2 hr after completion of primary burndown cycle	none
Waste Composition	Maximum daily percent (by weight) of a given waste component: MSW ¹ = 76% Sludge = 49% Adsorbs = 27%	Rolling 3-day average of daily waste-component percents

¹MSW = municipal solid waste, and consists of the combined weights of Type II (dry) and Type III (wet) wastes

²Data acquisition system (DAS) to be installed and used for continuous monitoring of primary- and secondary-chamber temperatures, as well as waste charge rate, waste charge interval, and primary and secondary burndown times

ATTACHMENT 1
OPERATING LIMIT CALCULATIONS

Pogo Mine Incinerator Performance Test - Sep/Oct 2013
Measured & Rolling 1-hr Average Waste-Load Weights

Date & Run ID	Waste Charge Wt (lb)	
	Measured	1-Hr Average*
29-Sep I5-1	37	
	42	
	50	
	53	46
	47	48
	62	53
29-Sep I29-1	43	51
	45	49
	53	51
	47	47
	45	48
29-Sep I23-1	42	47
	51	46
	44	46
	42	45
	43	45
	38	42
	41	41
	33	39
30-Sep I23-2	44	39
	45	41
	53	44
	45	47
	49	48
	44	48
	45	46
30-Sep I5-2	44	45
	41	44
	44	44
	40	42
	42	42
30-Sep I29-2	42	42
	46	43
	44	44
	47	45
	43	45
	43	44
	50	46
1-Oct I29-3	61	51
	46	52
	43	50
	46	49
	40	44
	45	44
	44	44
1-Oct I23-3	45	44
	56	48
	47	48
	44	48
	50	49
	61	51
	50	51
1-Oct I5-3	49	53
	53	53
	40	48
	43	46
	47	46
	43	43
	50	46
	Maximum	
		53

*Rolling 1-hr average based on assumed charge interval of approx. 15 minutes

**Pogo Mine Incinerator Performance Test - Sep/Oct 2013
Measured & Rolling 1-hr Average Waste Charge Intervals**

Date & Run ID	Waste Charge Interval (min)
29-Sep I5-1	16 16 16 17 16
29-Sep I29-1	16 16 15 16
29-Sep I23-1	16 17 16 16 16 16 17
30-Sep I23-2	15 16 16 16 16 16 16
30-Sep I5-2	16 16 16 16
30-Sep I29-2	16 16 16 16 16 16 16
1-Oct I29-3	16 16 16 16 16 16 16
1-Oct I23-3	16 16 16 16 16 16 16
1-Oct I5-3	17 16 16 16
Minimum	15

Pogo Mine Incinerator Performance Test - Sep/Oct 2013

Measured & Rolling 1-hr Average Temperatures (°F) - Primary and Secondary Combustion Chambers

Day 1	Primary Chamber		Secondary Chamber		Day 2	Primary Chamber		Secondary Chamber		Day 3	Primary Chamber		Secondary Chamber	
	Measured*	1-hr Ave	Measured*	1-hr Ave		Measured*	1-hr Ave	Measured*	1-hr Ave		Measured*	1-hr Ave	Measured*	1-hr Ave
09/29/13 I5-1	1440	-	1832	-	09/30/13 I23-2	989	-	1770	-	10/01/13 I29-3	1085	-	1817	-
	1566	-	1835	-		806	-	1521	-		1184	-	1819	-
	1416	-	1827	-		1105	-	1758	-		1183	-	1816	-
	1381	-	1835	-		1151	-	1779	-		1169	-	1818	-
	1475	-	1832	-		1129	-	1775	-		1164	-	1824	-
	1494	-	1816	-		1287	-	1833	-		1186	-	1831	-
	1488	-	1836	-		1485	-	1815	-		1173	-	1818	-
	1485	-	1837	-		1387	-	1814	-		1168	-	1828	-
	1543	-	1831	-		1373	-	1824	-		1166	-	1825	-
	1431	-	1825	-		1431	-	1818	-		1360	-	1820	-
	1457	-	1817	-		1411	-	1831	-		1339	-	1830	-
	1482	-	1827	-		1384	-	1832	-		1311	-	1827	-
	1428	1471	1835	1829		1362	1276	1818	1785		1305	1226	1817	1823
	1475	1463	1826	1829		1412	1326	1829	1811		1429	1246	1826	1823
	1403	1462	1822	1828		1363	1348	1825	1816		1477	1271	1834	1825
	1421	1465	1815	1827		1337	1363	1819	1819		1426	1292	1819	1825
	1551	1472	1819	1826		1334	1381	1832	1824		1439	1315	1821	1825
	1445	1467	1817	1826		1390	1389	1820	1823		1447	1337	1825	1824
	1453	1465	1834	1825		1445	1386	1827	1824		1433	1358	1830	1825
	1480	1464	1836	1825		1447	1391	1825	1825		1457	1382	1818	1824
1515	1462	1838	1826	1455	1398	1826	1825	1454	1406	1833	1825			
1596	1476	1838	1827	1480	1402	1825	1826	1452	1414	1821	1825			
1512	1480	1838	1829	1440	1404	1826	1825	1433	1422	1820	1824			
09/29/13 I29-1	1482	1480	1834	1829	1417	1407	1820	1824	1476	1436	1819	1824		
	1539	1489	1833	1829	1412	1411	1819	1824	1476	1450	1834	1825		
	1606	1500	1830	1830	1476	1416	1826	1824	1410	1448	1819	1824		
	1551	1513	1822	1830	1483	1426	1824	1824	1441	1445	1822	1823		
	1533	1522	1834	1831	1479	1438	1875	1829	1461	1448	1823	1824		
	1590	1525	1827	1832	1477	1450	1819	1828	1457	1450	1835	1825		
	1625	1540	1819	1832	1528	1462	1818	1828	1495	1454	1833	1826		
	1574	1550	1817	1831	1494	1466	1826	1827	1404	1451	1829	1826		
	1542	1555	1833	1830	1440	1465	1834	1828	1493	1454	1829	1826		
	1590	1562	1826	1829	09/30/13 I5-2	1470	1466	1823	1828	10/01/13 I23-3	1400	1450	1817	1825
	1516	1555	1817	1828		1582	1475	1828	1828		1588	1461	1838	1827
	1453	1550	1816	1826		1578	1486	1826	1828		1529	1469	1822	1827
	1435	1546	1834	1826		1517	1495	1825	1829		1438	1466	1835	1828
	1508	1544	1832	1826		1507	1503	1825	1829		1503	1468	1832	1828
	1542	1538	1819	1825		1577	1511	1890	1829		1507	1476	1827	1829
	1484	1533	1819	1824		1501	1513	1832	1830		1419	1475	1831	1829
	1468	1527	1816	1823		1445	1510	1819	1825		1451	1474	1818	1829
	1520	1521	1833	1823		1432	1506	1835	1827		1440	1472	1821	1828
	1483	1510	1824	1824		1442	1499	1828	1828		1510	1474	1819	1827
	09/29/13 I23-1	1391	1494	1836		1825	1406	1491	1834		1828	1450	1477	1825
1464		1488	1832	1825		1504	1497	1835	1828		1402	1470	1819	1825
1434		1475	1819	1825		1405	1491	1822	1828		1391	1469	1821	1826
1400		1465	1821	1825		1522	1486	1834	1829		1524	1464	1819	1824
1392		1460	1822	1826		1455	1476	1820	1828		1433	1456	1829	1825
1425		1459	1836	1826		1405	1467	1819	1828		1451	1457	1821	1824
1402		1450	1821	1825		1395	1457	1835	1829		1484	1455	1830	1823
1487		1446	1837	1826		1538	1454	1826	1828		1460	1451	1821	1823
1473		1445	1831	1827		1504	1454	1822	1827		1403	1450	1821	1822
1522		1449	1820	1828		1472	1457	1819	1827		1456	1450	1830	1823
1470		1445	1826	1827	09/30/13 I29-2	1423	1456	1822	1826	1437	1450	1822	1823	
1419		1440	1825	1827		1514	1462	1820	1826	1590	1457	1822	1823	
1418		1442	1827	1826		1456	1466	1830	1825	1593	1469	1836	1824	
1427		1439	1833	1827		1408	1458	1824	1824	1555	1481	1822	1825	
1409		1437	1819	1827		1400	1458	1825	1825	1531	1493	1825	1825	
1443		1441	1831	1827		1546	1460	1821	1824	1658	1504	1837	1826	
1419		1443	1824	1828		1535	1466	1836	1825	1633	1521	1836	1827	
1423		1443	1835	1827		1523	1476	1820	1825	1587	1532	1824	1827	
1480		1449	1836	1829		1519	1487	1823	1824	1574	1540	1821	1826	
1418		1443	1817	1827		1618	1493	1826	1824	1679	1558	1843	1828	
1412	1438	1838	1828	1654		1506	1821	1824	1736	1586	1830	1829		
1474	1434	1821	1828	1622		1518	1828	1825	1782	1613	1822	1828		
1480	1435	1821	1827	1618		1534	1851	1827	10/01/13 I5-3	1458	1615	1834	1829	
1472	1440	1837	1828	1679		1548	1822	1827		1556	1612	1837	1831	
1470	1444	1821	1828	1621		1562	1820	1826		1508	1605	1821	1829	
1553	1454	1825	1827	1576		1576	1820	1826		1450	1596	1825	1830	
1491	1461	1834	1828	1571		1590	1834	1827		1433	1588	1819	1829	
1468	1463	1822	1828	1597		1594	1819	1827		1539	1578	1833	1829	
1453	1466	1837	1829	1540		1595	1825	1826		1478	1565	1823	1828	
1558	1477	1837	1829	1512		1594	1833	1827		1430	1552	1828	1828	
1508	1480	1837	1829	1511	1593	1826	1827	1419		1539	1821	1828		
1472	1484	1826	1830	1541	1587	1836	1828	1469		1522	1819	1826		
Min =	1381	1434	1815	1823	1583	1581	1824	1828		1406	1494	1835	1826	
Ave =	1480	1480	1828	1827	1553	1575	1820	1828		1481	1469	1831	1827	
					1551	1570	1838	1826		1501	1473	1829	1827	
					1477	1553	1834	1827		1563	1473	1837	1827	
					1469	1540	1836	1829		1475	1470	1823	1827	
					1440	1529	1833	1830		1424	1468	1819	1826	
					1433	1517	1821	1829		1413	1467	1828	1827	
					1576	1516	1822	1829		1561	1468	1820	1826	
					1631	1523	1826	1829		1537	1473	1824	1826	
					1684	1537	1830	1829		1500	1479	1835	1827	
					Min =	806	1276	1521	1785	Min =	1085	1226	1816	1822
					Ave =	1460	1481	1820	1826	Ave =	1447	1468	1826	1826

*Combustion chamber temperature recorded manually at 5-minute intervals

Minimum Rolling 1-hr Average Temperatures	
Primary Chamber =	1226 F
Secondary Chamber =	1785 F

Pogo Mine Incinerator Performance Test - Sep/Oct 2013
Waste Component Percentages - Test Day 1

Date	Run #	Charge #	Type II (lb)	Type III (lb)	Sludge (lb)	Adsorbs (lb)	TOTAL (lb)	
9/29/2013	I-5-1	1	37				37	
		2			27	15	42	
		3	20	30			50	
		4			33	20	53	
		5	27	20			47	
		6			30	32	62	
	I-29-1	1	15	28			43	
		2			29	16	45	
		3	19		34		53	
		4			30	17	47	
		5	10		35		45	
	I-23-1	1	14		28		42	
		2	22		29		51	
		3	16		28		44	
		4			28	14	42	
		5			29	14	43	
		6			29	10	39	
		7			30	11	41	
		8			21	12	33	
			TOTAL	180	99	419	161	859

Component	MSW ¹	Sludge	Adsorbs
Percent	32%	49%	19%

¹MSW = Type II + Type III

**Pogo Mine Incinerator Performance Test - Sep/Oct 2013
Waste Component Percentages - Test Day 2**

Date	Run #	Charge #	Type II (lb)	Type III (lb)	Sludge (lb)	Adsorbs (lb)	TOTAL (lb)	
9/30/2013	I-23-2	1		34		10	44	
		2	18	27			45	
		3		35		18	53	
		4	29	16			45	
		5			30	19	49	
		6	24	20			44	
		7			28	17	45	
		8			30	16	46	
	I-5-2	1	20	24			44	
		2			28	13	41	
		3			28	16	44	
		4			29	11	40	
		5			29	13	42	
	I-29-2	1	13		29		42	
		2		29		17	46	
		3		24		20	44	
		4		36		11	47	
		5			29	14	43	
		6		29		14	43	
		7			28	22	50	
		8			30	20	50	
			TOTAL	104	274	318	251	947

Component	MSW ¹	Sludge	Adsorbs
Percent	40%	34%	27%

¹MSW = Type II + Type III

Pogo Mine Incinerator Performance Test - Sep/Oct 2013
Waste Component Percentages - Test Day 3

Date	Run #	Charge #	Type II (lb)	Type III (lb)	Sludge (lb)	Adsorbs (lb)	TOTAL (lb)	
10/1/2013	I-29-3	1	23	38			61	
		2	27	19			46	
		3	26	17			43	
		4	20	26			46	
		5		30		10	40	
		6	16	29			45	
		7			30	14	44	
		8	21	24			45	
	I-23-3	1	25	31			56	
		2		37		10	47	
		3			28	16	44	
		4	23	27			50	
		5		48		13	61	
		6	22	28			50	
		7		33		16	49	
		8			28	25	53	
	I-5-3	1	21	19			40	
		2	10	33			43	
		3	17	30			47	
		4	24	19			43	
		5			29	21	50	
			TOTAL	275	488	115	125	1003

Component	MSW ¹	Sludge	Adsorbs
Percent	76%	11%	12%

¹MSW = Type II + Type III